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Canada Centre for Mineral and Energy Technology
Centre canadien de la technologie des minéraux et de l'énergie

ISO/TC 102/SC 2 - 14th INTERNATIONAL MEETING BELO HORIZONTE, BRAZIL, 1988-10-23/28

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ISO/TC 102/SC 2 - 14th INTERNATIONAL MEETING BELO HORIZONTE, BRAZIL, 1988-10-23/28

by

R. Sutarno*

(Convenor of ISO/TC 102/SC 2/WG 12B)

This report covers the part of the proceedings of the 14th International Meeting of ISO/TC 102/SC 2 dealing with the work of ISO/TC 102/SC 2/WG 12B (Working Group on Evaluation of Statistical Data, Technical Committee 102 - Iron Ores, Subcommittee 2 - Chemical Analysis). Other topics discussed at the meeting will be reported by the leader of the Canadian delegation.

Keywords: ISO, international meeting, iron ores, chemical analysis.

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ISO/TC 102/SC 2 - 14ième RÉUNION INTERNATIONALE
BELO HORIZONTE, BRAZIL, 1988-10-23/28

par

R. Sutarno*

Ce rapport présente la partie du procès-verbal de la 14ième réunion internationale du Groupe ISO/TC 102/SC 2 ayant pour objet les travaux du Groupe de travail sur l'évaluation des données statistiques, Comité technique 102 - Minerais de fer, Sous-comité 2 - Analyse chimique ISO/TC 102/SC 2/WG 12B. Les autres sujets discutés lors de la réunion feront l'objet d'un rapport qui sera présenté par le chef de la délégation canadienne.

Mots-clés: ISO, réunion internationale, minerais de fer, analyse chimique

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ISO/TC 102/SC 2/WG 12B MEETING

This meeting was called in order to discuss in detail various statistical problems faced by the sub-committee. It was attended by fifteen delegates interested in statistics.

Date: 1988-10-23
Time: 12:30 to 16:00
Place: Mineracoes Brasileiras Reunidas Office

Attendants:

E.S. Pilkington	- Australia
J. Munro	- Australia (Secretariat of ISO/TC 102/SC 2)
B.W. Ziegelaar	- Australia
T.M. De Freitas	- Brazil
J.M. Pereira	- Brazil
R. Sutarno	- Canada (Convenor)
J.C. Hole	- Canada
T. Ohtsubo	- Japan
K. Mabuchi	- Japan
Y. Yori	- Japan
Y. Matsumura	- Japan
J.L. Bruiset	- France
H. Umans	- Netherlands
M. Sidiropoulos	- South Africa
A. Cunningham	- UK

Topics discussed were:

(1) Convenor's report

Convenor reported the working group activities during the period of 1986/1988. Details, as annexed to this report, were tabled in the subcommittee meeting as document ISO/TC 102/SC 2 N 933E.

(2) Expression of precision data

The method for expressing precision data in standard documents has been discussed. It was agreed to modify the present method. For minor elements, the regression equations expressing the precision as a linear function of the concentration level will be modified by specifying a minimum value of precision. Furthermore, the possibility of negative precision should be avoided by fixing, if necessary, the intercept of the regression line. This new method will be applied to all standard methods currently in process as well as those standards currently under revision.

(3) Liaison with ISO/TC 69/SC 6

The necessity of establishing liaison with ISO/TC 69 (Application of statistical methods) was discussed. It was agreed to recommend ISO/TC 102/SC 2 to have a formal liaison with ISO/TC 69/SC 6 in order to ensure that statistical procedures used within the subcommittee are valid and to appoint R. Sutarno, convenor of WG 12B, as the liaison officer.

(4) ISO/TC 17/SC 1 (Steel - Chemical Analysis)

The differences between the statistical methods used by ISO/TC 17/SC 1, one of the ISO Technical Committees, closely related with TC 102, and ISO/TC 102/SC 2 were discussed. No decision was made, except to agree that both sub-committees have valid reason for using their particular procedures.

(5) Certified Reference Materials (CRM) - Iron ores

The subject of CRM-iron ores was discussed. Australian delegates expressed their concern that some CRMs in circulation have "wrong" certified values for some elements. The discussion was continued at the subcommittee meeting. Although the subcommittee does not have mandate to issue a "caution" regarding the use of those CRMs, the consensus opinion is that the producers of CRMs should periodically review the certified values of their CRMs. Australia was requested to compile information on CRMs that, in their opinion, have certificates with doubtful accuracy.

It was also agreed, that TC 102 should request REMCO to modify their requirement of the content of CRM certificates to include statistical parameters necessary in order to use them properly, i.e., between- and within-laboratories standard deviations, number of determinations and number of laboratories that participated in the certification of the CRM.

(6) International tests for the period of 1988-1990

Three international tests will be conducted during the period of 1988-1990: (1) Determination of Fe-total by XRF (includes trace element corrections), (2) Determination of Fe-total by coulometric method and (3) The use of ICP in iron ore analysis.

(7) Resolutions

Twenty-seven resolutions were made at the 14th meeting of ISO/TC 102/SC 2. The following are those concerning WG 12B:

RESOLUTION 1

ISO/TC 102/SC 2 agreed to accept the recommendation of WG 12B that the modified regression equation be applied to draft standard methods currently in process and to existing standards at the time of their revision.

RESOLUTION 2

ISO/TC 102/SC 2 requested the Secretariat to establish a formal liaison with ISO/TC 69/SC 6, with Dr. Sutarno as the liaison officer between the two Sub-committees.

RESOLUTION 3

ISO/TC 102/SC 2 agreed that the mandate of WG 12B be extended for a further 2 years, in order to maintain the continuity of centralized data processing. The delegates also wished to record their further appreciation of the excellent work in this area being carried out by Dr. Sutarno of Canada.

RESOLUTION 15

ISO/TC 102/SC 2 requested the Secretariat to contact REMCO, asking that ISO guides dealing with CRMs require that the values of s_{Lc}, s_{wc}, N and n be provided on certificates of analysis for iron ore CRMs.

RESOLUTION 16

ISO/TC 102/SC 2 requested Mr. Ziegelaar (Australia) to prepare a compendium of CRMs, indicating both those which are suitable for use by the Sub-committee and those in need of review, including reasons.

RESOLUTION 17

ISO/TC 102/SC 2 requested that the Secretariat of TC 102 prepare a submission to REMCO, suggesting that consideration be given to the combination of ISO Guides 30, 31, 33 and 35, and to the incorporation of the recommendations of document ISO/TC 102/SC 2 N 863.

RESOLUTION 18

ISO/TC 102/SC 2 requested the Secretariat to extract trace element data on CRMs from reports of the various working groups of the Sub-Committee, and to submit such data to the producers of the CRMs, requesting that the data be used on certificates as indicative values.

RESOLUTION 23

ISO/TC 102/SC 2 agreed that line 5 of Resolution 7 of the 13th meeting of the Sub-Committee should be amended as follows: Alter "it is advisable not to use this material for this propose" to "it is advisable that this material not be used in the application of the standard"

CONCLUSION AND RECOMMENDATION

Using the previous periods as the yardstick, the subcommittee has been moderately active during the period of 1986/88. This is caused by the completion of the "bread and butter" work, to develop standard classical methods for chemical analysis of major elements in iron ore. More effort is now directed to modernization of international standard methods.

In response to the rapid development of analytical techniques, partly due to the intensive use of microprocessors, considerable effort of the subcommittee has been and will be directed to the development of standards on instrumental methods of analysis of iron ore, such as ICP, XRF and coulometry. These methods will lead to improvements in productivity in analytical laboratories.

The implementation of the concept of "accuracy" (trueness and precision) control in international standard methods, in contrast to the former concern with "precision" only, has obliged the subcommittee to pay more attention to the availability of good quality CRMs. For this reason, the subcommittee has taken steps toward working more closely with both TC 69 and REMCO, as well as with other related technical committee such as TC 17 (Steel).

The increasing demand on accuracy of the standard methods has forced the subcommittee to embark into quasi-research projects such as the determination of sources of error in analysis of total iron in iron ore. This project has made ISO/TC 102/SC 2, not only a developer of international standards, but also an international research forum where analytical problems can be collectively solved. It becomes a more useful organization for iron ore industry.

In view of this expanding scope, it is highly recommended that Canada, as one of the world's major producers and exporters of iron ore, should continue to support the work of this committee.

Future meeting

ISO/TC 102/SC 2 and its working groups will meet in London, U.K. on the third week of September 1990.

ISO/TC102/SC2 (WG12-88/4) N933E
October, 1988

ISO/TC 102/SC 2/WG 12B

IRON ORES - CHEMICAL ANALYSIS - EVALUATION OF STATISTICAL DATA

REPORT ON ACTIVITIES DURING THE PERIOD OF

1986 - 1988

(Revised in Belo Horizonte)
Brazil

Note: **This report will be circulated by the Secretariat as document ISO/TC 102/SC 2 N933E**

ISO/TC102/SC2(WG12-88/4) N933E
October, 1988

ISO/TC 102/SC2/WG12B

REPORT ON ACTIVITIES DURING THE PERIOD OF 1986 - 1988

(Revised in Belo Horizonte)

At the 16th meeting of ISO/TC 102/SC 2, the subcommittee agreed to extend the mandate of WG 12B for a further two years particularly to maintain the continuity of centralized data processing. In addition, the working group is also concerned with various statistical matters. The working group met at the MBR office, October 23, 1988 - 12:30 to 16:00 p.m. attended by 15 delegates.

1. International tests

Three sets of international test data were sent to WG 12B for evaluation by their respective convenors. They are:

(a) WG24B - DRI - Determination of carbon and sulfur content - High frequency/infrared method. Convenor: G. Butin, France.

(b) WG29A - Determination of total iron content - Coulometric method. Convenor: A. Cunningham, UK.

(c) Study Group on Source of Errors on the determination of Fe - total - Results of international test - 1986/1988.

The results of evaluation have been reported to the respective convenors. To conform with TC 69, Dixon's test for outliers has been replaced by Grubb's test.

2. Expression of precision data

At the last WG 12B meeting (Tokyo 1986), the problem of the method for expressing precision data in the standard documents, particularly in the case of trace elements, was discussed at length. A modified regression equation was suggested in order to determine if it will be more realistic (better agreement) with the experimental value than the unweighed equation. This modified equation has been applied to the past precision data generated by the subcommittee. The results are reported separately and were tabled at the meeting. As a result of lengthy discussion this decision was confirmed.

WG 12B convenor is requested to furnish the modified regression equations for the draft standard methods currently in process as well as those standards under revision.

These are:

Cr and Ni by AAS, Mn by AAS with both acid attack and fusion dissolutions, P by spectrophotometric method, V by AAS with and without extraction, V by spectrophotometric method and determination of various elements by XRF.

Those standards under revision are circulated as documents ISO/TC 102/SC 2 N907, N908, N909, N910 and N911.

Liaison with ISO/TC 69/SC 6

In an effort to harmoniæ the statistical methodology used by ISO Technical Committees, ISO/TC 69 and its subcommittees are establishing liaison with concerned Technical Committees.

ISO/TC 69/SC 6, with DIN as its Secretariat, is a subcommittee on measurement methods and results. It deals with developing methods for estimation of accuracy of measurement methods. Presently, it has three active working groups:

1. WG 1 - Revision of ISO 5725 (BSI).
2. WG 3 - Measurement uncertainty (DIN).
3. WG 4 - Statistical aspects of reference materials (SCC).
   WG 4 is a joint working group between ISO/TC 69 and ISO REMCO (Reference materials committee).

ISO 5725 "Accuracy (trueness and precision) of measurement methods and results".

This is the most relevant standard for ISO/TC 102/SC 2 issued by TC 69. It is currently under revision jointly by WG 1 and WG 4. The revised standard, scheduled for publication in 1990, will include methods for assessment of trueness of a measurement method. The present version of ISO 5725 deals only with precision. ISO 5725 will be divided into six parts:

Part 1: General principles and definitions (presently at DP stage).
Part 2: Basic method for repeatability and reproducibility of a standard measurement method.
Part 3: Intermediate measures of the precision of the test method.
Part 4: Basic methods for estimating the trueness of a test method (presently at DP stage).
Part 5: Alternative methods for estimating accuracy of standard measurement methods.
Part 6: Practical applications.

Harmonization with other international organizations

ISO, IUPAC (International Union of Pure and Applied Chemistry) and AOAC (Association of Official Analytical Chemists, USA) are making serious efforts in harmonizing ISO 5725 with their procedures.

The delegates at the WG 12B meeting agreed to recommend ISO/TC 102/SC 2 to establish a formal liaison with ISO/TC69/SC 6 and appoint a person as the liaison office between the two technical subcommittees.

Other topics discussed at the meeting were:

(1) The differences between the way TC 17/SC 1 and TC 102/SC 2 handle their statistical problems.
It was agreed that these differences are caused by the difference in the nature of the work within these two committees.

(2) The subject of CRM iron ores currently in circulation throughout the world was raised.
ISO/TCR 6 listing all CRM iron ores was tabled. Some of these CRM's have "wrong" certified values. The question is whether WG 12B will issue a warning. It was decided that this problem is outside the mandate of WG 12B and will be referred to the subcommittee.

ISO/TC102/SC2 (WG12-88/4) N933E
October, 1988

MEETING

Place: MBR - Mineracoes Brasileiras Reunidas
Belo Horizonte-Brazil

Date: October 23, 1988

Time: 12:30 - 16:00

AGENDA

1. Convenor's report on activity during the period of 1986-1988.
2. Liaison with ISO/TC 69/SC 6.
3. Expression of precision data in standard documents.
4. Any other business.